

WHAT IS CLAIMED IS:

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1 1. A semiconductor device having a self-aligned
2 contact hole, the device comprising:
3 a substrate;
4 a first conductor structure and a second conductor
5 structure formed on the substrate;
6 an insulator structure formed on the first and second
7 conductor structure and on the substrate except over the
8 substrate in a region between the first and second conductor
9 structures; and
10 sidewall spacers, each sidewall spacer being formed to
11 abut against both a side of the first or second conductor
12 structures and a side of the insulator structure, the
13 sidewall spacers manifesting the self-aligned contact hole
14 in the region between the first and second conductor
15 structures.

1 2. The semiconductor device of claim 1, wherein the
2 first and second conductor structures are first and second
3 gate structures, respectively.

1 3. The semiconductor device of claim 1, wherein the
2 first and second conductor structures comprise:
3 a gate oxide layer formed on the substrate;
4 a conductive layer formed on the gate oxide layer; and
5 a gate cap/insulating layer formed on the conductive
6 layer. 103 v Schwake et al

1 4. The semiconductor device of claim 1, further
2 comprising:
3 a contact plug formed in the self-aligned contact hole.
103 alone

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1 5. An unsymmetrical semiconductor device using a
2 self-aligned contact hole, the device comprising:
3 a substrate having impurity regions formed therein;

4 a first conductor structure and a second conductor
5 structure formed on the substrate except over the substrate
6 in a region between the first and second conductor
7 structures;

8 first sidewall spacers, each first sidewall spacer
9 being formed to abut against both a side of the first or
10 second conductor structures and a side of an insulator
11 structure, the first sidewall spacers manifesting the self-
12 aligned contact hole in the region between the first and
13 second conductor structures; and

14 second sidewall spacers formed on sides of the first
15 and second conductor structures opposite of the self-aligned
16 contact hole.

1 6. The unsymmetrical semiconductor device of claim 5,
2 wherein the ion concentration of a first impurity region is
3 different than the ion concentration of a second impurity
4 region. 102

1 7. The unsymmetrical semiconductor device of claim 5,
2 further comprising:
3 a contact plug formed in the self-aligned contact hole,
4 the contact plug being in contact with the first sidewall
5 spacers and the first impurity region. 103 a/c

1 8. The unsymmetrical semiconductor device of claim 7,
2 wherein the contact plug is also in contact with a bit line. 103

1 9. The unsymmetrical semiconductor device of claim 7,
2 wherein the contact plug is not disposed directly above the
3 first and second conductor structures. 103